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MASTER OF MILITARY STUDIES

VIEWING THE FUTURE OF SEABASING THROUGH THE LENS OF HISTORY:

A historical analysis of seabasing and what it says about the concept's future applicability

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Executive Summary

Title: Viewing the Future of Seabasing through the Lens of History: A historical analysis of seabasing and what it says about the concept's future applicability.

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Thesis: Seabasing provides tremendous operational and logistical flexibility that in the past has often proved to be a decisive element of combat success, however it also presents fundamental constraints to the operational commander and thus must never be viewed as more than a complementary means of support for operations across the spectrum of conflict.

Discussion: Seabasing is not a revolutionary concept. In fact, seabasing has been used as a method of supporting military operations as far back in American history as the Revolutionary War. During the course of 20th century modern warfare, it has played a prominent role, employed in both large scale and limited combat operations from World War II to as recently as Operations in Iraq and Afghanistan. Current proponents of seabasing argue that, because of rapidly advancing technology, future seabasing concepts will revolutionize employment and support for forces on the battlefield. In these concepts, seabasing is seen as a large-scale, joint force enabler providing long-term operational level logistics. Using a series of historical vignettes from World War II, The Falkland Islands, Vietnam, and Operations Enduring and Iraqi Freedom, this paper builds a case that, regardless of the steady—and at times—rapid advance of technology throughout the evolution of warfare, seabasing has always possessed inherent limitations. These limitations can be categorized by three main themes: vulnerability to security threats, a constrained throughput rate, and an incompatibility with the evolving character of modern warfare. Additionally, the paper examines two modern examples of successful seabasing: the Marine Corp's Special Landing Force in Vietnam and Marine Task Force 58 in Afghanistan in order to draw conclusions as to what the appropriate role of seabasing might be in the future.

Conclusion: Seabasing's logistics shortfalls limit the size and duration of operations it can support independently. Additionally, seabasing may be considered too risky as a primary source of logistics due to its vulnerability to asymmetric threat systems designed for the littoral environment. Within these employment constraints however, seabasing can be a powerful tool for the operational commander, particularly during shaping operations and in logistically immature or politically contentious environments. The key to employment of seabasing is not to exclusively-rely on it, but rather to utilize it as part of a larger, balanced logistics network. Therefore, while development of future seabasing capabilities should certainly continue, it should be done so with limited expectations.

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THE OPINIONS AND CONCLUSIONS EXPRESSED HEREIN ARE THOSE OF THE INDIVIDUAL STUDENT AUTHOR AND DO NOT NECESSARILY REPRESENT THE VIEWS OF EITHER THE MARINE CORPS COMMAND AND STAFF COLLEGE OR ANY OTHER GOVERNMENTAL AGENCY. REFERENCES TO THIS STUDY SHOULD INCLUDE THE FOREGOING STATEMENT.

Illustrations

Page

Preface

Seabasing is one of several evolving Joint Integrating Concepts that describe a visualization of how Joint Forces hope to operate 10-20 years in the future. Because seabasing is seen as a future Joint capability, its potential scope is immense and would be like no maritime asset the United States has employed since the final years of World War II. As a Marine supply officer and general-purpose logistician, seabasing has the potential to directly affect my profession in fundamental ways. Thus, I saw it as an important topic for study. My literature reviews on seabasing produced a seemingly limitless amount of information in the form of Joint and individual service concept documents, government-sponsored and independent studies, and opinion papers. The focus of most of the literature seemed to be on the current limitations of science and technology and the advancements required to bridge the gap between current capabilities and the future vision. What I found to be conspicuously absent, however, was any comprehensive study of military history on the subject of seabasing, and what that might say about the viability of future concepts. That absence guided my research and the writing of this paper. It is by no means a comprehensive historical review of seabasing, but I believe it begins to shed light on some common trends that should be carefully considered as the development of future seabasing concepts continues.

Table of Contents

Page

1. INTRODUCTION

> *The time is upon us when we no longer are tied to the buildup on the beach as a sine qua non of an amphibious operation. We can cut the umbilical cord of shore-based facilities, including beaches, beach exits, gradients, airfields, ports, etc., and operate entirely from bases afloat. Seabase is the coming era of the amphibious force.*[1]

This quote is a common claim of today's seabasing proponents. The Seabasing Joint Integrating Concept of 2005, the Department of the Navy's "Naval Operating Concepts" of 2005, and the Marine Corps' "Marine Corps Operating Concepts for a Changing Security Environment" of 2006 all claim that seabasing is a key enabler of future operations for many of the same reasons.[2] It might be surprising to find out, however, that the statement above was made in 1971, in a *Marine Corps Gazette* article by Lieutenant Colonel J. W. Hammond titled, "Seabase: The True Amphibious Operation." What it highlights is that the concept of seabasing is not new. In fact, seabasing has been used as a method of supporting military operations as far back in American history as the Revolutionary War. Seabasing also played a large part in 20th century modern warfare, employed in both large scale and limited combat operations from World War II to as recently as Operation Enduring Freedom in 2001. Current proponents of seabasing argue that, because of rapidly advancing technology, future seabasing concepts will revolutionize employment and support for forces on the battlefield. In these concepts, seabasing is seen as a large-scale, joint force enabler providing long-term operational level logistics.[3]

History, however, reveals that seabasing has always possessed inherent limitations, regardless of the steady—and at times—rapid advance of technology throughout the evolution of warfare. Using a historical analysis of various applications of seabasing, this paper will show that, while seabasing provides tremendous operational and logistical flexibility, often proving to be the decisive element of combat success, it will always present limitations to the operational

commander and thus must never be viewed as more than a complementary means of support for operations across the spectrum of conflict.

Seabasing is fundamentally a logistical capability. It is a way of basing forces and equipment from which to project power ashore, and it is a way of providing initial or long-term sustainment to units ashore from ships offshore. While seabasing can also serve as a method of providing additional warfighting functions such as fire support and command and control, this paper will focus primarily on its logistical characteristics. As such, it is first necessary to understand the relationship between seabasing and logistics.

While logistics has many scientific and mathematical applications, logistics as an art has always been the search for an ideal balance between responsiveness (i.e. the timely delivery of forces and support to the warfighter), and a minimized logistics "footprint" on the battlefield.[4] Finding this balance can often mean the difference between success and failure in a military operation. In describing the nature of logistics, the Marine Corps Doctrinal Publication, *Logistics*, states that, although logistics by itself cannot win wars, it can be the major contributing factor in losing a war.[5] Under the right circumstances, seabasing can enable success in war by striking such a balance as to provide logistics responsiveness and the operational flexibility of a light footprint. Indeed, seabasing has proven to be a critical capability that directly contributed to combat success for that very reason—most notably during World War II, but also more recently during Vietnam and Operation Enduring Freedom in Afghanistan. Conversely, other historical examples show that seabasing, as an operation's center of gravity, can have multiple critical vulnerabilities, including susceptibility to attack by conventional and asymmetric threats, complexity, and over-reliance on it as the sole source of logistics.

Finally, it should be noted that the majority of the historical references used in this paper

are, by all definitions, amphibious operations, most of which required large—often cumbersome—logistics buildups at a beachhead or port. Admittedly, one of the strongest arguments of future seabasing concepts is that it will enable a high tempo during operational maneuver by avoiding the need to consolidate and build combat power at a beachhead.

Amphibious operations are historically synonymous with the need to gain a lodgment, consolidate, and build up combat power at a beach or a port facility before being able to conduct decisive operations inland. For that reason, seabasing concept documents often eschew the term "amphibious" altogether. But a logical assertion can be made that seabasing is in fact, simply an extension of classical amphibious doctrine.[6] This is possible because, regardless of whether logistics flow from a traditional beachhead or directly from the ship to the objective as future seabasing concepts envision, the principles are the same. That is, seabasing's concepts and traditional amphibious landings alike require the careful management and prioritization of lift assets between assault forces and logistics sustainment, and a highly organized flow of sustainment from the seabase to the forces forward on the battlefield. As this paper will show, this is difficult to achieve even in a relatively secure environment.

2. SECURITY THREATS TO THE SEABASE:

The Falkland Islands

In 1982, Argentine Marines invaded the British territory of the Falkland Islands, a remote, largely uninhabited archipelago only 300 miles from the Argentine mainland. The British government, intent on forcibly reclaiming the islands, responded almost immediately with the initiation of Operation CORPORATE, a task force consisting of two aircraft carriers, 11 surface warships, five nuclear attack submarines, and amphibious ships with 3 Commando Brigade of the Royal Marines as its landing force.[7] In addition to the warships and amphibious

transports that made up the South Atlantic Task Force, a group of 50 rapidly assembled merchant ships accompanied the fleet to provide sea-based logistics support.[8]

During the planning and initial stages of Operation CORPORATE, the British considered maintaining the bulk of the ground forces' sustainment aboard ships in order to improve their speed and flexibility during operations ashore (i.e. sea-based logistics).[9] However, due to an unknown submarine threat and shore-based anti-ship missiles, the British could not claim to have complete control of the sea. Of even greater concern to the British task force commander however, was the fact that his carrier-based Harrier aircraft could not provide air superiority. As a result the task force commander considered seabasing too dangerous and ordered the landing force's entire logistics support capability put ashore once 3 Commando Brigade secured a beachhead at San Carlos on East Falkland Island.

With air superiority contested, the Argentine Air Force attacked British ships with over 300 aircraft sorties throughout the campaign. By far the most formidable arm of Argentina's defense forces, the Argentine Air Force came close to preventing British forces from retaking the Falkland Islands by itself. Further, a successful attack on the HMS *Glamorgan* on 12 June by a shore-based Excocet missile also showed the credible threat anti-ship missiles could pose to a seabase. In all, Argentine forces sank six British ships and badly damaged ten more.[10] Most of the ships attacked were destroyers and frigates; however, on May 25 an Argentine Mirage attacked and sank the merchant ship *Atlantic Conveyor*. Her cargo included ten Wessex medium lift helicopters and three Chinook heavy lift helicopters; their loss eliminated over half of the Task Force's logistics transport capacity.[11] The attack on *Atlantic Conveyor* had profound effects on the prosecution of the land campaign by significantly delaying the beachhead buildup phase and severely degrading the mobility of the landing force for the remainder of the war. Instead of

conducting a planned helicopter assault from San Carlos to Mount Kent, the entire 3 Commando Brigade was forced to foot-march the 50 kilometer distance across East Falkland Island.

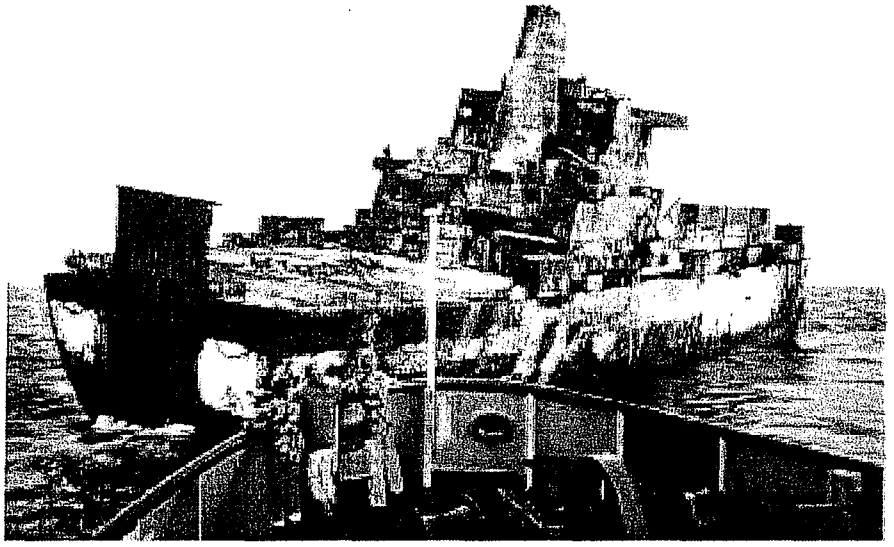

Figure 1. Operation CORPORATE, Falkland Islands 1982: The burnt-out hulk of *Atlantic Conveyor* as a tug prepares to take her in tow. She would soon sink and take with her six Wessex medium lift helicopters and three Chinook heavy lift helicopters, representing over half of the British fleet's air transport capability. In addition to the helicopters, the ship contained thousands of tons of stores including ammunition, Harrier spares and tents. *Atlantic Conveyor's* loss shows how vulnerable a seabase with relatively few ships can be. Had the Argentine Air Force attacked more merchant or logistics ships the British task force may not have been able to continue operations.[12]

Guadalcanal

The near catastrophic effect that the sinking of *Atlantic Conveyor* had on the British fleet during the Falklands campaign is strikingly similar to the threat American forces faced in the first days of the amphibious assault on Guadalcanal in August 1942. Like the British during the Falklands, the U.S. did not have sea control around Guadalcanal during their invasion. Two days after the initial landings, a Japanese naval force attacked and destroyed four of eight cruisers providing protection for the Guadalcanal landing force off Salvo Island. When the Japanese attacked the U.S. fleet, cargo ships were still offloading supplies onto the Guadalcanal beachhead. These ships constituted the entire logistics capacity of the South Pacific Fleet at that time. Had they pressed the attack and destroyed the defenseless U.S. cargo ships, the Japanese

could have dealt a catastrophic blow to the Allies' ability to continue operations in the Solomon Islands, and effectively cut off the Marines on Guadalcanal indefinitely.[13] In this way, both the Falkland Islands and Guadalcanal illustrate the following important point regarding seabasing. A seabase with limited capacities of men and materiel, and no means of immediate resupply or reinforcement, has great potential to become an operation's critical vulnerability—or in other words, its single point of failure.

Modern proponents of seabasing might claim that the historical lessons of Guadalcanal or the Falkland Islands do not have direct applications to the future of seabasing. It is certainly arguable that no enemy has the ability to challenge the U.S. for air superiority—either now or in the foreseeable future. It might seem logical, therefore, to dismiss the difficulties encountered during Guadalcanal or the Falklands when considering future seabasing applications since the lack of air superiority played so critical a role in those campaigns. Unfortunately, however, their lessons are far from irrelevant. While technology has provided the United States with an admittedly overwhelming advantage in airpower, it has not produced the same proportional advantage in the maritime environment. Indeed, the country's hegemonic status as the undisputed naval power of the world mutes the fact that its forces are particularly vulnerable against some relatively unsophisticated maritime threats to include diesel electric submarines, anti-ship missiles, and mines.[14] These increasingly common systems are ideally suited for the littoral environment and therefore pose a significant threat to any future seabase. What is more, their inexpensive nature means they will proliferate among potential adversaries the United States may face. The impact asymmetric threats like anti-ship missiles, mines, and diesel-electric submarines can have on operations utilizing seabasing can be illustrated by events as recent as Operation IRAQI FREEDOM in 2003.

Operation TELIC: Al Faw Peninsula, Iraq

As a supporting effort to the U.S. led invasion of Iraq in March of 2003, 3 Commando Brigade of the Royal Marines was assigned the strategically vital mission of seizing and protecting the Iraqi oil installations and pipeline infrastructure around the country's only deep water port at Umm Qasr on the Al Faw peninsula. Because 3 Commando's objective areas were in close proximity to the coastline, the mission—designated as Operation TELIC—was deemed ideal for both a seabased helicopter assault and seabased logistics sustainment.[15] However, the threat posed by possible anti-ship missiles and coastal mines was considered too great by both the Royal Navy and the U.S. Navy, whose amphibious ships also supported the operation. This threat forced all amphibious ships to operate from distances over the coastline's horizon. Nevertheless, 3 Commando Brigade still deemed seabasing a viable option with support from the U.S. Navy's high-speed Landing Craft Air Cushioned (LCAC) hovercraft.

Once the initial helicopter assault waves had neutralized the anti-ship missile threats, LCACs would transport light armored vehicles, logistics equipment, and supplies to a pre-determined landing area designated as Red Beach. In support of this plan, mine countermeasure ships successfully cleared approach paths from the amphibious ships to Red Beach. Despite efforts on their part, divers and the Royal Engineers could not guarantee that the hovercraft landing site was completely cleared of anti-personnel mines. Based on this assessment, the U.S. Navy considered the use of their LCACs for assault and logistics support too dangerous. The lack of LCAC support combined with the amphibious ships' inability to loiter close to the shore, forced 3 Commando Brigade to base all helicopters and logistics sustainment in Kuwait prior to the assault on Umm Qasr. Only attack aircraft, providing close air support to the landing force, were based at sea.[16]

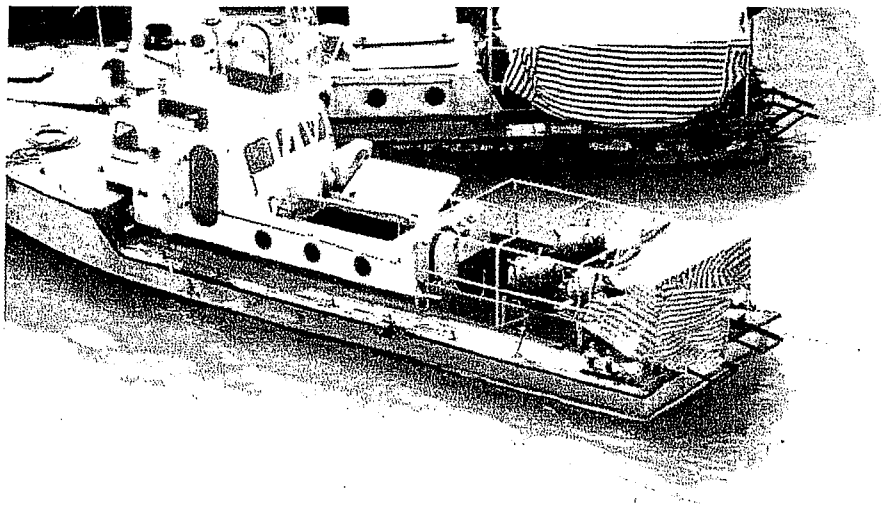

Figure 2. Operation TELIC: Al Faw Peninsula Iraq, 2003. The photo shows two captured Iraqi launches used for laying anti-ship mines. Asymmetric threats such as these mines are easy to emplace and relatively hard to detect in a littoral environment. The threat of mines prior to the commencement of Operation TELIC forced British and U.S. Amphibious ships away from Um Qasr port, beyond ranges supportable by anything other than the U.S. Navy's high speed LCAC hover craft.[17]

The Al Faw landing during Operation TELIC highlights what threatens to be a flawed assumption of future seabasing concepts—that ships can operate off hostile coastlines completely unmolested. Indeed, 3 Commando's planners assumed they would have sea control and air superiority prior to and during the assault on Umm Qasr. However, in the words of Colonel Jeremy Robbins, the Senior British Land Advisor to the U.S. Coalition Force during Operation IRAQI FREEDOM, "[those assumptions] were to be found less certain in practice, and both primarily from low cost or old technology threats that were almost asymmetric in effect."[18]

The mere presence of credible maritime threat capabilities by no means invalidates the use of seabasing. The ultimate success of both the Guadalcanal and Falkland Islands campaigns proves that seabasing is possible under the most difficult combat conditions. However, vulnerabilities arise from an over-reliance on seabasing when there are legitimate threats to the

seabase. The British opted against seabasing in the face of relatively minor threats during Operation TELIC because the alternative of basing forces and sustainment from nearby Kuwait was available. Nevertheless, the implication of this type of risk-averse decision-making in the face of viable alternatives is important to the future utility of seabasing. The fact that seabasing's concepts envision a relatively small number of multi-purpose platforms supporting large forces ashore, confronted with (a ubiquity of) credible, low-tech threat systems suggest that seabasing might be too risky to be the sole means of support in a most future combat scenarios.

3. THE COMPLEXITY OF SEABASING AND ITS EFFECT ON OPERATIONS:

Guadalcanal & the Falkland Islands

The Guadalcanal and Falkland Islands campaigns are most notable as lessons that underscore the need for sea control and protection from enemy air threats for seabased operations, but they also reveal a more subtle, though no less important factor: seabasing is highly complex. Without good communication and organization, seabasing is prone to critical breakdowns that can have disastrous effects on combat operations. The Guadalcanal and Falklands campaigns are again excellent historical references because both were executed by personnel with little prior seabasing experience. Organizational weaknesses due to a lack of training and experience, communication problems, and too few surface and vertical lift assets characterized the seabasing effort of both campaigns. The results were also the same: forces ashore completely stalled due to sluggish logistics.

Two days after the initial landings at Guadalcanal, the Japanese attack on U.S. warships at Salvo Island effectively ended the logistics buildup at the beachhead. Before they departed, the logistics ships were only able to offload one third of their cargo. This created immense hardships for the Marines ashore. One of the most notable supply shortfalls was ammunition. In particular,

.30 caliber ammunition was limited to 400 rounds per man. The status of food stocks ashore was not much better. Even with the discovery of an abandoned supply of Japanese rice on Guadalcanal, Marines were still limited to two meals per day during the early days of the campaign.[19] However, this dire logistics outlook was not the sole responsibility of the U.S. Navy's inability to defend the landing sites. Complete logistics disorganization and a lack of manpower at the beachhead severely hampered the buildup of supplies. More than once, the unloading of transports had to be stopped completely in order to clear beachheads too congested with supplies to receive any more.[20] This disorganization was simply due to a lack of experience.

Once again, the comparison between Guadalcanal and the Falklands is strikingly similar: forty years of significant advances in communications and logistics technology could not prevent British forces from encountering the same logistical problems that mired operations at Guadalcanal. During 3 Commando Brigade's amphibious landing at San Carlos, the pace of the offload and logistics buildup was agonizingly slow. Operational timelines, pressed by an impatient British Prime Minister and her War Cabinet, called for an attack on the capital city of Stanley within two days of landings at San Carlos. The British task force, however, was largely unprepared for the complex task of unloading supplies from a myriad of ships, hampered further by constant harassment from the Argentine Air Force. As a result, it took almost a week to offload enough supplies for even a modest breakout of one battalion against the lightly defended outpost at Goose Green.[21]

The rushed formation of the British task force was certainly a primary factor in the slow buildup of supplies at the beachhead. Incomplete manifests combined with stowage plans that did not prioritize supplies needed most by combat units forced the offload of many unneeded supplies ashore while unknowingly leaving many vital stocks at sea.[22] More significant than the

disorganized stowage plan however, poor logistics command and control due to a lack of communication, and a severely limited number of surface and helicopter lift assets were the primary reasons for the slow buildup at San Carlos.

Argentine air attacks sunk the *Atlantic Conveyor* along with its three heavy-lift Chinook helicopters on May 25th, just as these vital lift assets were needed to support the San Carlos landings. This loss of airlift placed a much greater and unplanned burden on the fleet's already limited ship-to-shore surface transports.[23] Worsening the situation was the fact that no communications existed between the logistics ships and the transports taking cargo to the beaches. Additionally, beach control units did not have communication either with the transports, or in many cases, their discharge ships. As a result, Commando Logistic Regiment had little knowledge of what cargo was arriving as transports approached the beachhead.[24]

Although the Guadalcanal and Falkland Islands landings clearly reveal the complex nature of seabased operations, an important fact to note is that both landings were relatively unopposed. With their forces not directly engaged, a disorganized and uncoordinated logistics flow from the seabase was at least somewhat affordable, and ultimately surmountable. In the face of a coordinated and determined enemy resistance however, assault forces fighting to seize terrain will quickly consume vital supplies. Such a scenario demands that a seabase generate adequate logistics throughput. In quantifiable terms, throughput is measured by the product of average velocity (how fast logistics can move) and logistics mass (how much logistics is available to move).[25] During the landings at Guadalcanal and the Falkland Islands three factors repeatedly affected logistics throughput: disorganization (both on the seabase and ashore), a lack of communication resulting in poor command and control, and inadequate lift, also known as "connectors." Lack of experience certainly contributed to all these factors. After Guadalcanal,

logisticians gained a multitude of experience from each successive amphibious landing of World War II—both in the Atlantic and Pacific Theaters—producing better and more efficient organization aboard the seabase and ashore. However, despite the Allies' immense, collective experience, seabasing operations throughout World War II would continue to struggle with both the amount and prioritization of connectors and effective communication between the forward lines and the seabase. The following additional examples from World War II illustrate this point.

Salerno

On September 9, 1943, the Allied 5th Army landed on the Italian mainland at the Gulf of Salerno. Over three times the size of the force landed at Guadalcanal, Operation AVALANCHE planned to cut off the line of communication between Axis forces in southern Italy and the rest of Europe. The Salerno landing achieved operational surprise and thus initial success, allowing the movement of forces inland and the establishment of a well-organized beachhead. However, despite a well-conceived plan for seabased reinforcement and logistics support, the Germans' ability to reinforce their internal lines, in the end, exceeded the Allies' ability to build up forces and logistics at the beachhead. This inability to build combat power rapidly enough to outmaneuver the Germans was due primarily to a shortage of landing craft. The shortage was not an error of omission by Allied planners; it was simply all that were available at the time due to competing demands in the Pacific Theater. [26]

By September 12, the Allied advance had stalled due to lack of throughput, while the Germans continued pouring reinforcements around Salerno. Eventually the Germans surrounded the beachhead and forced the 5th Army into a defensive posture for almost two weeks. In the end, the Allied position at Salerno held and the Germans eventually withdrew in the face of heavy naval and air bombardment. Nevertheless, the mission failed to achieve its operational goal of

isolating German forces in southern Italy.[27] This failure can be traced to a premature culminating point reached during the amphibious assault as a result of inadequate throughput from the seabase.

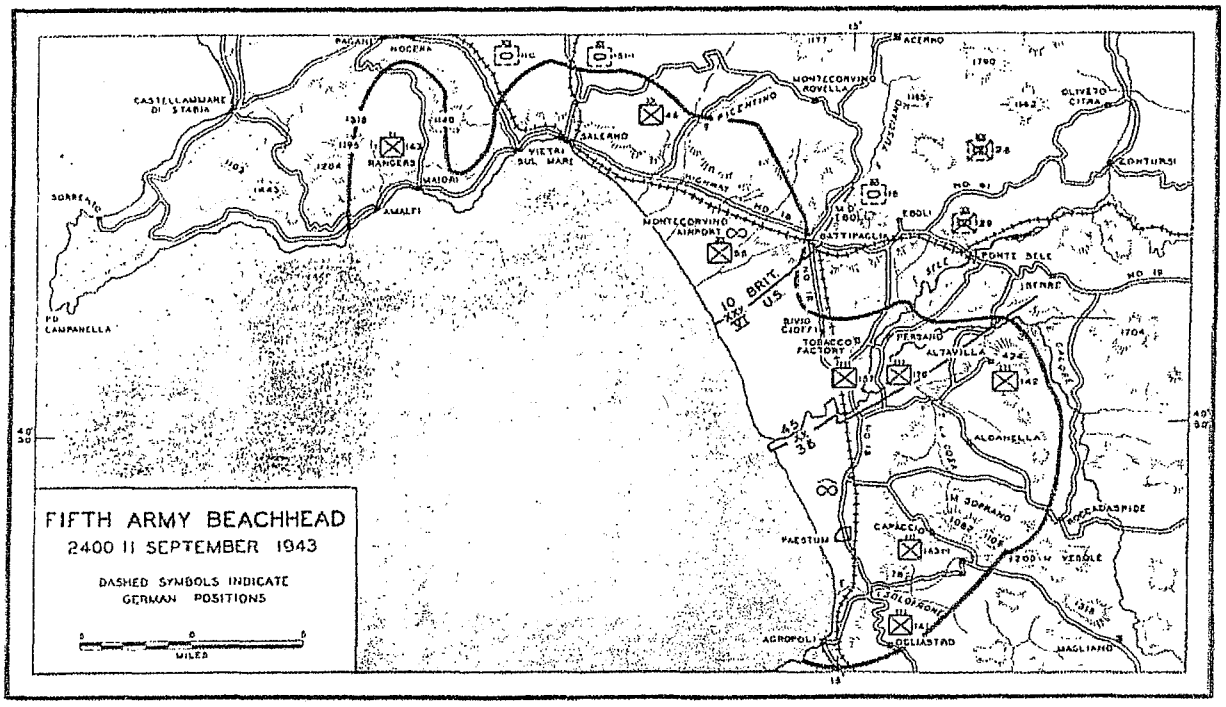

Figure 3. Operation AVALANCHE: Salerno, Italy 1943. Two days after the initial landings on September 9th, the Fifth Army beachhead had expanded along a 35 to 49 mile coastline with an average depth of 6 to 7 miles. Despite a highly organized seabase and shore party logistics system, the German's ability to reinforce using internal lines supported by good road networks simply outpaced the Allies' ability to build combat power ashore. A lack of surface lift assets was cited as a major factor in the inability to sustain the breakout from the initial beachhead. By September 12th, the Allied advance had stalled. Salerno illustrates difficulty of generating adequate throughput from seabase.[28]

Salerno clearly revealed the difficulty of generating logistics throughput from a seabase in the face of heavy resistance, and particularly the critical role connectors play in that process. Later Allied landings compensated for Salerno's mistakes by applying greater and greater logistics mass to the problem of achieving adequate throughput rates. During the final Allied amphibious landings at Normandy, Iwo Jima, and Okinawa, combat operations never stalled for lack of logistics throughput thanks to a fully mature U.S. war industry and virtually no materiel

or supply restrictions. But the colossal seabases that supported these operations often concealed continued problems resulting from communication difficulties and connector shortfalls.

Iwo Jima and Okinawa

During the landings at Iwo Jima, an overly centralized logistics command and control structure at the operational level combined with inadequate means of communication between shore parties, transports, and ships created general disorder and significant logistical inefficiencies. Rough seas, cluttered beaches, and a shortage of transports rounded out an often-chaotic logistics support effort during Iwo Jima's critical early stages. Although combat momentum never stalled for lack of supplies, artillery and mortar ammunition in particular remained critically low at division supply areas during the initial phases of the operation due to the difficulties of moving logistics from the seabase to the fight.[29] Communication between Marine logisticians ashore and Navy personnel aboard cargo ships was particularly bad and exacerbated an already confusing offload process. While some of the beaches were crowded with unloading craft and congested supplies, traffic at other beaches only trickled ashore, greeted by idle shore parties. Many ships were held offshore for no reason and shore parties frequently learned the nature of cargo aboard landing craft only after they reached the beach.[30]

Even the culminating event of World War II—Okinawa, a veritable logistics marvel with a seabase of 1,139 auxiliary ships, 746,850 tons of cargo, and 433 landing craft—revealed how critical a role connectors play in seabased operations.[31] On D-Day, a lack of resistance on the beaches as the initial wave of Marines landed prompted Marine amphibious staffs aboard ships to send in additional waves of personnel ahead of schedule. However, this decision created a shortage of landing craft available for cargo in follow-on waves such as artillery prime movers.

As a result, many items that were required before forces could advance inland could not be delivered ashore until the following day.[32]

Current assessments of seabasing's potential for future operations draw many of the same conclusions found in the previous examples from World War II and the Falkland Islands. For instance, the Center for Naval Analysis, in a series of reports on seabasing published in 2006, found that logistics systems and command and control shortfalls were two critical vulnerabilities of seabasing. Logistics systems that limit visibility aboard ships and throughout the supply chain, disjointed logistics processes between services, and a traditional lack of data bandwidth and communication systems allocated to logistics units are all cited as potential "seams" in the seabasing concept.[33] Other reports cite a lack of vertical lift assets for logistics transport as a significant weakness of seabasing—particularly in a scenario that avoids a beachhead buildup altogether.[34] Finally, modeling and simulation efforts have raised concerns about the maximum sustainable throughput of a seabase and its limits on the size and length of operations supportable ashore.[35] These recent assessments reinforce what a historical analysis already proves: seabasing has inherent limitations that restrict its maximum logistics throughput. This does not invalidate seabasing as a viable concept for future operations and campaigns. It simply suggests the need to employ seabasing as a complementary method to a larger, more balanced logistics effort. More recent examples of seabasing show how this might be done.

4. SUCCESSFUL APPLICATIONS OF SEABASING:

The U.S. Marine Corps' Special Landing Force in Vietnam

From 1965 to 1973, during the Vietnam War, the Marine Corps along with the U.S. Navy Seventh Fleet employed the Special Landing Force (SLF) as a floating reserve and amphibious strike force. The SLF generally consisted of one battalion landing team, a logistics support unit

and a Marine helicopter squadron, although at times the SLF conducted up to brigade-size amphibious operations with as many as three infantry battalions maneuvering ashore.[36] For many reasons, the SLF is an excellent example of successful seabasing in action.

Seabasing's concepts tout its ability to use the sea as operational maneuver space, facilitated by the flexibility of afloat-logistics, and the SLF did exactly that. Capitalizing on Vietnam's unique geography dominated by a long coastline, comparably little inland depth, and multiple navigable rivers, the SLF conducted operations along the entire length of the Vietnam coastline with remarkable agility. For instance, from 25 September to 5 December in 1965, the SLF conducted a series of five operations called DAGGER THRUST spanning from Tam Quan in the north Central Highlands region, to as far south as Lang Ke Ga near Saigon—a distance of over 300 miles.[37] As another example, in June 1966, the SLF participated in Operation NATHAN HALE along with nine battalions from the 1st Air Cavalry Division near Qui Nhon in central South Vietnam. Less than one month later, the SLF augmented III Marine Amphibious Force near Hue City during Operation HASTINGS, intended to disrupt North Vietnamese Army movements across the Demilitarized Zone.[38]

Perhaps even more important than its tremendous operational agility, the SLF also enabled access to remote, immature environments inaccessible by any other military means. Operation JACKSTAY in 1966 best illustrates this capability. Capitalizing on the SLF's ability to use its seabase to maneuver inland up navigable waterways, planners designed Operation JACKSTAY as a way to penetrate the Rung Sat delta of the Saigon River where insurgents had been conducting ambushes on merchant ships moving along Long Tao River. The Long Tao was the primary deep draft channel from Saigon's ports to the South China Sea, and thus strategically

significant.[39] The mission of JACKSTAY was to seek out and destroy Viet Cong bases within the delta, considered too remote for operations by U.S. forces in Vietnam up to that point.

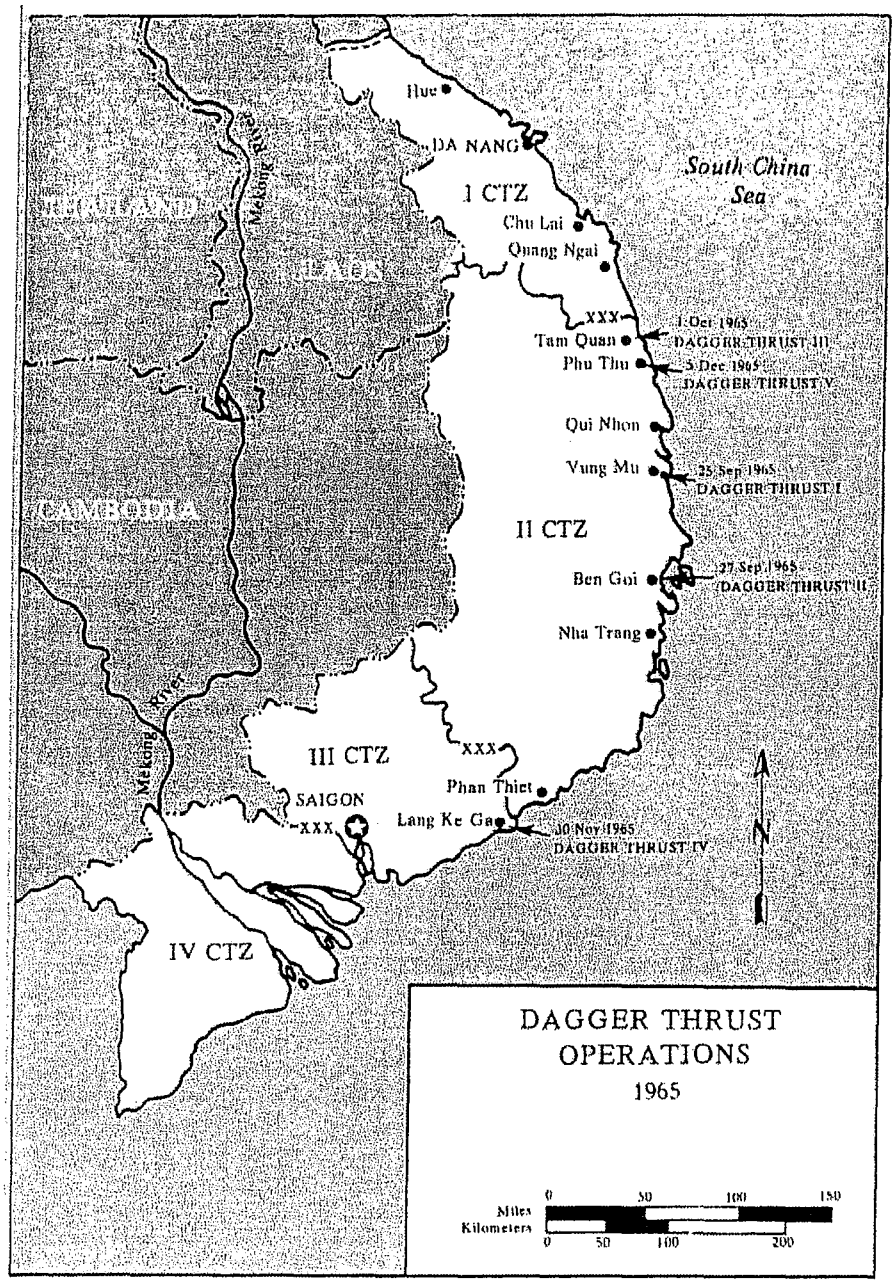

Figure 4. Operation DAGGER THRUST: Vietnam 1965. The Marine Corps' Special Landing Force (SLF) conducted a series of five operations ashore in the span of just over two months. During that time, the operations ranged from Lang Ke Ga near Saigon to as far north as Tam Quan just south of I Corps zone. DAGGER THRUST illustrates the SLF's ability to use the sea as operational maneuver space. It also illustrates the operational flexibility and agility seabasing can provide. [40]

Despite its impressive showcase of the SLF's operational reach, JACKSTAY's after-action report received only mixed reviews.[41] Like many SLF operations, its tangible results in terms of enemy killed or equipment destroyed were less than planners had hoped. However, what JACKSTAY and other similar SLF operations provided was a means to disrupt Viet Cong operations in areas the guerillas had previously considered safe havens.[42] More important than their tactical significance at the time however, SLF operations reveal what seabasing's critical contribution to future contingencies can be.

The National Military Strategy of 2004, highlighting future security threats, describes a geographic "Arc of Instability" extending from the Western Hemisphere through Africa and the Middle East to Asia. Because a preponderance of the world's failed states lies within this arc, many countries in it will likely serve as a base of operations for non-state actors and other threats to U.S. interests in the future.[43] Additionally, a majority of the population within the Arc of Instability lies along the littorals; and the poorest nations within the Arc have three important things in common—unstable governments, poor economies, and little to no infrastructure. This type of environment is likely to characterize the future of U.S. military deployments. Therefore, as JACKSTAY did for Viet Cong sanctuaries in the Rung Sat delta of Vietnam, seabasing has the potential to do for future security threats within the remote reaches of the Arc of Instability.

While SLF operations no doubt provide a window into seabasing's future possibilities, it would be unwise to draw conclusions before first viewing the SLF within its complete historical context. Despite its impressive maneuverability and versatility, many commanders who served in Vietnam questioned the operational impact of the SLF. Marine Lieutenant General John Chaisson, who served on the COMUSMACV staff as a colonel, bluntly suggested that the SLF was "a concept looking for a home."[44] Others suggest that, at a minimum, the SLF's flexibility of

maneuver forced the Viet Cong away from coastal peninsulas where they had previously found sanctuary.[45] Nevertheless, claims that the SLF was largely ineffective at the operational level are valid. As a war of counterinsurgency, lasting success in Vietnam—when achieved—came from a combination of long-term control of areas, pacification efforts, and the support of the Vietnamese people. The fact that most SLF operations lasted no longer than two weeks, lends credibility to the claim that it was operationally and strategically ineffectual against the Viet Cong insurgency. One primary reason for the typically short duration of its missions was the SLF's lack of logistical endurance. During operations conducted beyond immediate coastal areas—and particularly when operating as a brigade—the SLF frequently received the bulk of their logistics support from land-based units.[46]

Figure 5. Operation JACKSTAY: Vietnam 1966. Operation JACKSTAY showed the SLF's ability to penetrate deep into remote, inaccessible environments unlike any other military capability. Using a combination of helicopter and surface transports, Battalion Landing Team 1/5 conducted search and destroy missions deep in the Rung Sat delta, which up to that point had been a Viet Cong safe haven due to its remoteness. JACKSTAY clearly illustrates the immense operational reach seabasing can provide, particularly in remote areas with little infrastructure.[47]

The SLF's struggle to provide logistics support exclusively from the seabase during lengthy or large (i.e. brigade-size) operations ashore is particularly important. After all, successful battalion-size SLF operations—while still great examples of seabasing—are no more than historical comparisons to the Marine Corps' current Marine Expeditionary Unit (MEU) capability. The fact that seabased logistics shortfalls limited the SLF's range, size and duration ashore indicates that its use may be limited to the early stages of a long-term operation, and beyond that, it will always be dependent on other means of logistics support. However, perhaps the best means to gauge the future of seabasing is to examine its most recent application.

Task Force 58 in Afghanistan

Following the terrorist attacks on the World Trade Center and the Pentagon on September 11th, 2001 the nation's Global War on Terrorism focused immediately on Afghanistan and the ruling Taliban's close associations to Al Qaida and Osama bin-Laden. In order to destroy the Al Qaida network and overthrow the Taliban, United States forces would have to establish a sustained ground presence in the country. For this purpose, the Commander, U.S. Central Command assigned the mission to seize Forward Operating Base (FOB) Rhino to a unit designated as Task Force 58, comprised of both the 15th and 26th MEUs. A remote hunting camp with a 6,400 foot-long dirt airstrip and some associated buildings, Rhino would serve as a base of operations in Afghanistan for attacking key Taliban road networks leading to and from the city of Kandahar—the Taliban's spiritual center.[48]

On the night of 25 November 2001, six CH-53E helicopters launched from the USS *Peleliu*, stationed in the Indian Ocean, with a reinforced company and the commanding officer of Battalion Landing Team 1/1. Their objective, FOB Rhino, was 350 nautical miles away. Supported by aerial refueling from Marine KC-130 aircraft as well as a refueling stop-over point

in Pakistan, the initial helicopter assault successfully landed its Marines on their objective at the FOB. The company of Marines immediately secured the airstrip for follow-on waves of additional Marines and light armor vehicles brought in by KC-130 aircraft from Jacobabad, Pakistan. For more than two months, the Marines of Task Force 58 would operate out of FOB Rhino in Afghanistan, supported by their seabase in the Indian Ocean.

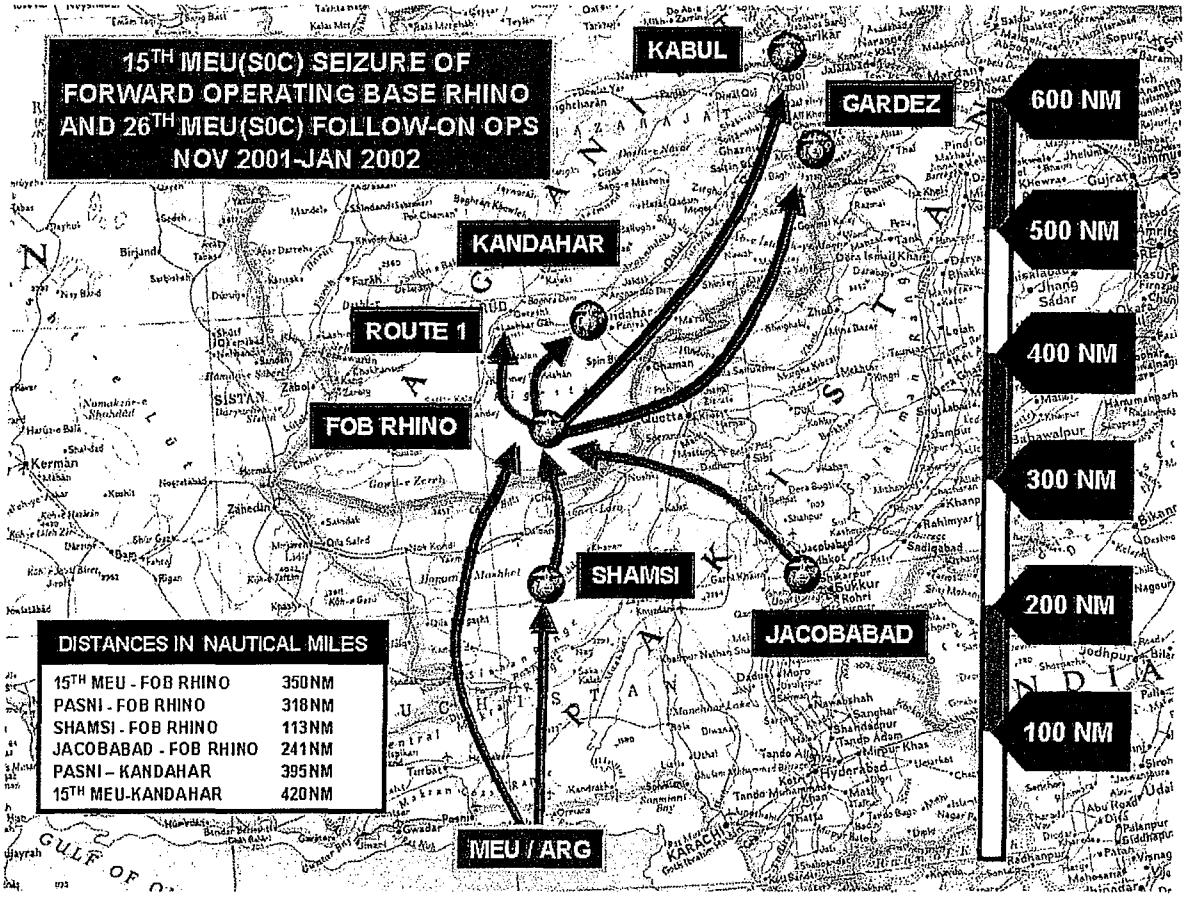

Figure 6. Task Force 58 Operations in Afghanistan: The seabase (depicted as the MEU/ARG on the map) played a vital role in the early stages of operations to seize FOB Rhino. It provided a base of operations to coordinate and establish intermediate support bases in Pakistan that were critical to the logistics viability of the mission. Political constraints imposed by the Pakistani government required a minimized footprint ashore, which the seabase facilitated.[49]

The seabase played a vitally important role in the initial seizure of FOB Rhino. Due to Rhino's distance from the ships of Task Force 58, intermediate support bases in Pakistan for refueling points, KC-130 basing, and as a source of bulk water and fuel were critical to the logistical viability the mission. As such, the support of the Pakistani government was of

paramount importance. However, due to the volatile nature of Pakistan's internal politics and its historically close relations with Afghanistan, the government's support came with the requirement to conceal the presence of U.S. forces in Pakistan from the public.[50] Facilitating this requirement, the ships of the seabase provided a base of operations for the bulk of Task Force's personnel and thus the means to keep the logistics footprint in Pakistan at a minimum. Operating 12 to 20 miles offshore, the seabase transported equipment, personnel, and supplies via LCUs and LCACs to designated landing beaches at night in order to maintain secrecy. From there, convoys would travel by an improvised dirt road to an airfield at Pansi, Pakistan.[51] In addition to the need to maintain a nondescript presence in Pakistan, U.S. political constraints forced CENTCOM to place a limit on the number of Task Force 58 personnel in Afghanistan at 1,400.[52] With over 8,000 personnel from the combined 15th and 26th MEUs, the additive force level constraints of both the Pakistani government and CENTCOM might have made the mission infeasible if it were not for the seabase.

In addition to its ability to base the majority of Task Force 58's personnel at sea, the seabase also provided a substantial amount of logistics support throughout the operation. The seabase received over ten thousand pallets of replenishment supplies for subsequent delivery to FOB Rhino and the Task Force's intermediate support bases in Pakistan.[53] However, the rapidly changing nature of the mission at FOB Rhino quickly outstripped the seabase's ability to support its requirements. The 350 nautical mile distance from the seabase to the objective was an obvious factor for this, but the requirement for external logistics support would have been inevitable regardless of the distance factor.

During the mission's planning stages, Task Force 58's staff requested C-17 strategic lift aircraft for the initial assault phase in order to build combat power at the FOB as rapidly as

possible. However, with roughly three times the cargo capacity of a C-130, the initial support envisioned from C-17 sorties quickly changed to a requirement for multiple sorties per day. Dust conditions were extremely severe, creating a dangerous environment where aircraft constantly operated at the edge of their performance envelope. To keep dust and foreign debris at a minimum, U.S. Navy Seabees sprayed approximately 5,000 gallons of water a day on the airfield. This along with potable and hygiene-related water consumption required a daily C-17 sortie for water alone.[54] As the Task Force mission evolved, strategic and inter-theater airlift continued to prove critical, transporting items such as barrier materials, construction supplies, detainee handling equipment, fresh fruit, and forklifts to handle the expanding amount of supplies and materiel at the FOB. Additionally, the massive influx of logistics traffic on the FOB's unimproved airstrip created its own logistics burden. Runway repair and maintenance equipment including graders, compactors, a water truck, a runway sweeper truck, and a specially contracted dust palliative called "Gorilla Snot" added to the list of strategic lift requirements.[55]

While seabasing was, without a doubt, a critical capability to the success of Task Force 58's mission in Afghanistan, in the context of the entire mission, it was only a supporting effort. Rhino's airstrip and the strategic airlift it enabled, was arguably the mission's center of gravity. An overwhelming amount of logistics volume came from strategic and inter-theater lift as compared to the seabase.[56] However, the relegation of the seabase to a supporting effort for Task Force 58 does not change the fact that the mission would not have been possible without the capability it provided. Nevertheless, it does reinforce the lessons drawn from the SLF in Vietnam: seabasing's applications are suited primarily for the initial stages of an operation. Any role it plays beyond that will be complementary to a larger, more robust logistics system.

5. ANALYSIS OF SEABASING WITH RESPECT TO FUTURE OPERATIONS

It is certainly true that advances in logistics technology have continually improved the operational reach and endurance of warfare throughout history. Therefore, a key question is what impact current and future technology advances will have on seabasing's future ability to provide long-term support at the operational level. The answer is probably not a significant amount. Even at its most advanced, conceptual state, the seabase will still be less responsive and flexible than other comparative means of support—particularly as the technology of warfare itself becomes more and more advanced.

Recent quantum leaps in logistics technology allowing for better supply chain visibility have done more to reduce the size of logistics stores forward on the battlefields of Iraq and Afghanistan than anything else.[57] The ability to see stock levels at strategic depots and commercial vendors and have them delivered rapidly via strategic or even contracted airlift arguably makes airstrips more valuable to logisticians than an advanced seabase capability. This was certainly the case during Task Force 58's operations in Afghanistan.

Additionally, the last four years in Iraq and Afghanistan have revealed a need to rapidly adapt equipment and capabilities as a conflict—and the enemy—evolves. This requirement has been met by an unprecedented proliferation of civilian contractors on the battlefield. Though it may be naïve to think that future, higher intensity wars will be supported by as many civilians as the current conflict, the fact is, civilian contractors have been a part of every major U.S. war since the Revolution and will continue to be in the future. What is more, the United States military's technology-driven focus will create an ever-increasing level of complexity in our combat systems. This increase in complexity will continue to demand more specialized support than is available in the military's ranks.[58] Seabasing touts the ability to move cumbersome logistics functions offshore, but that capability only accounts for those functions provided by the

military. It ignores the military's dependence on contractor support, the myriad additional facilities, tools, equipment, and other requirements that come with it, and the fact that contractor and military-provided logistics support are often heavily inter-connected.

6. CONCLUSIONS AND RECOMMENDATIONS

Despite what Lieutenant Colonel Hammond predicted in 1971, future forces cannot likely operate entirely from bases afloat. Beaches, ports, airfields and other forms of shore-based logistics will continue to play a vital role in the sustainment of expeditionary forces for several reasons. First, inexpensive, and widely available anti-access weapons, designed for and thus harder to detect in a littoral environment, will continue to make seabasing vulnerable. Second, regardless of future innovations to seabasing, providing sustainment via platforms at sea will always constrain logistics throughput as compared to other means due to its heavy reliance on connectors, unencumbered communications, and interoperable logistics systems. Finally, seabasing does not account for the evolution of other forms of logistics such as the role of strategic airlift and contracted logistics support. At the same time, however, seabasing provides access to remote environments with immature infrastructure like no other military capability can do. This freedom of maneuver, along with an ability to limit the logistics footprint ashore when necessary means that despite its inherent shortfalls, seabasing can still be a powerful tool for the battlefield commander. The key to employment of seabasing is not to exclusively rely on it, but rather to utilize it as part of a larger, balanced logistics network.

What does this assessment mean in terms of investment in time and resources for future seabasing platforms? Ironically, a study conducted by the Marine Corps Combat Development Command in 1973 provides an answer to this question that is still remarkably accurate today. That study listed three primary constraints as considerations for employment of seabasing:

1. No air or naval threat to the seabase, which would preclude the Navy from remaining in the Area of Operation, can exist.

2. Conflict, if any, must be in the low, to mid-level intensity range.

3. The size of the landing force should not exceed that of a Marine Amphibious Brigade, now referred to as a Marine Expeditionary Brigade (MEB).[59]

These constraints are still reasonable today given the findings in this study. This and the likely character of future warfare point the way ahead for the development of seabasing. The majority of the world's conflicts in the post-Cold War era and the United States' ongoing presence in Iraq and Afghanistan indicate that wars of insurgency will continue to characterize future U.S. military deployments. A common characteristic of all counterinsurgency operations is their prolonged and rapidly evolving nature. Given seabasing's incompatibility with these characteristics in particular, and its limitations at the higher intensity range of conflict, it does not promise to play a prominent role in future wars beyond what was seen in Vietnam by the SLF or in Afghanistan by Task Force 58. Therefore, while development of seabasing capabilities should certainly continue, it should be done so with limited expectations. Framing future research and development with these realistic expectations will conserve limited resources for other competing requirements and just as importantly, it will properly focus the design of seabasing platforms that are best suited for missions within its natural constraints.

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[58] To show how the trend of civilian contractors on the battlefield will likely progress, we need only look back as far as Vietnam. Technological innovation in combat systems during the Vietnam War created a need for civilian contractors to provide on-site technical and logistics support. The use of civilians for this purpose was the beginning of a new phenomenon in modern war. As early as 1965, *Business Week* magazine labeled Vietnam a "War by Contract".[60] However, even then, the ratio of civilians to military personnel was relatively low at 1 to 6.[61] Compare that to the current war in Iraq and Afghanistan—similar to Vietnam in its low-intensity character—where the ratio of civilians to military personnel is nearly equal, and it is clear that the need for contracted support is not diminishing.[62]

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